In the Supreme Court of the United States.

OCTOBER TERM, 1896.

THE UNITED STATES, APPELLANT,
v.
THE BUFFALO NATURAL GAS FUEL COMPANY. } No. —.

APPLICATION FOR WRIT OF CERTIORARI TO REVIEW THE JUDGMENT OF THE CIRCUIT COURT OF APPEALS FOR THE SECOND CIRCUIT.

The Solicitor General, on behalf of the United States, respectfully prays for a writ of *certiorari* to require the above-entitled cause to be certified to this court for review and determination, pursuant to the provisions of § 6 of the act entitled "An act to establish Circuit Courts of Appeals," etc., approved March 3, 1891. Said cause arose under the Customs Administrative Act of June 10, 1890; a protest or notice of dissatisfaction having been filed by the company with the Collector of Customs for the collection district and port of New York, which protest was overruled by the Board of General Appraisers, to review whose decision the petition was filed.

The Circuit Court reversed the decision of said board, and the judgment of the court was affirmed by the Circuit Court of Appeals for the Second Circuit.

As will be shown, however, the affirmance by the Circuit Court of Appeals was in main upon a point originating in that court, the principal ground of the decisions of the board and of the Circuit Court being expressly disapproved; and one judge of the Circuit Court of Appeals disagreed with his colleagues, basing his decision upon a point which had been abandoned by the appellee at an early stage of the controversy.

Amount involved.—The questions involved in this case arise under the present tariff act as well as under that of 1890, during whose life the case arose. I am informed by the Secretary of the Treasury that the amount thus directly and indirectly involved is now over $18,000, and is increasing every day with fresh importations at Detroit and Buffalo. The principle upon which the case was decided by the Court of Appeals is also important in its general bearing as well as novel.

Statement of facts.—This case involves importations of natural gas at the port of Buffalo in 1891. The gas is obtained by drilling into the earth at Shirkston, in the Province of Ontario, Dominion of Canada. It is conveyed through pipes which are laid along the ground and under the Niagara River and is used in Buffalo in the same form in which it is taken from the earth.

Tariff provisions.—The collector classified the gas among "raw or unmanufactured articles, not enumerated

or provided for in" the act of 1890, which are dutiable at 10 per cent *ad valorem*. It is indisputable that this clause governs, unless the gas is specifically to be found upon the free list.

The two paragraphs of the free list which have been held by different judges to cover this article are as follows: (by Judge Wallace) paragraph 496, "asphaltum and bitumen, crude;" (by the other judges and appraisers) paragraph 651, "minerals, crude or not advanced in value or condition by refining or grinding, or by other process of manufacture, not specially provided for in this act."

The record.—The greater part of the record consists of expert evidence as to the *scientific* meaning of certain words in the tariff. All of the judges of the Circuit Court of Appeals hold this evidence to be immaterial.

History of the case.—The first test case upon natural gas resulted favorably to the Government.

This case has been adversely decided at every point, but upon most diverse grounds.

All of the judges of the Circuit Court of Appeals concur in disapproving the main ground for the decisions of the Board of General Appraisers and of Judge Coxe.

One of the judges of the Circuit Court of Appeals disapproves also the reasoning of his colleagues, as well as the conclusion to which they came.

That this reasoning is not only erroneous, but most dangerous in its tendency, we shall endeavor to show.

The grounds which have been assigned for placing gas upon the free list, in the various tribunals before which this case has come, are as follows: (*a*) That it is a mineral, scientifically considered; (*b*) that the Ontario Court of Appeals has held it to be a mineral; (*c*) that it is called a "mineral," or a "mineral product," or "mineral resource" in certain Federal and State publications; (*d*) that in case of doubt the presumption is with the importer; (*e*) that the statistical tables contained in a certain Treasury publication classify it among minerals; (*f*) that it is bitumen.

The following table shows the distribution of these positions among these various tribunals:

Table of decisions.

	Points—	
	Approved.	Disapproved.
General Appraisers	*a, b, c*	*f*
Judge Coxe	*a, d*	.....
Judges Lacombe and Shipman	*c, e*	*a*
Judge Wallace	*f*	*a, b, c, e*

We discuss them *seriatim*.

(*a*) The General Appraisers and Judge Coxe based their decision in the present case (pp. 143-5, overruling their prior decision, pp. 140–3) largely upon the testimony of geologists and chemists as to the scientific meaning of the word "mineral." This was directly contrary to *Marvel* v. *Merritt*, 116 U. S., 11, and the cases summed up in *Lutz* v. *Magone*, 153 U. S., 105. Its error is so clearly shown in the opinion of Judge Lacombe that it

does not seem to require further comment. It may be added that in the brief for appellant in the Circuit Court of Appeals (pp. 7–12), copies of which are handed to the court, other reasons for disregarding the (very conflicting) scientific testimony were given.

(*b*) The Ontario decision relied upon by the Board of General Appraisers was partly based upon scientific testimony given in that case and partly upon a definition—wide enough to include prehistoric relics—found in a certain English case. The former ground is inapplicable here, both because the testimony is not to be found in this record and because scientific testimony is incompetent under our decisions. Had the Board of Appraisers been aware of this, doubtless they would not have followed the case. The English definition was not intended to apply and can not properly apply to such a case as this, as shown in the brief aforesaid at pp. 20–27. The decision is contrary to the ordinary meaning of the word "mineral" in the vernacular, as held by Judge Wallace. (See definitions collected in said brief at pp. 14–16.) The legal meaning is the same as the vernacular meaning, there being no proof of any commercial designation to the contrary. This is admitted by all the judges of the Court of Appeals, and has been frequently held by this court (id., pp. 16–20; *Dunham* v. *Kirkpatrick*, 101 Pa. St., 36, 44; *Saltonstall* v. *Wiebusch*, 156 U. S., at p. 602).

(*c*) The Board of Appraisers also referred to certain census reports, geological survey reports, and other documents which classify natural gas among *mineral products*

and *mineral resources*. That classification is common and is probably correct. A mineral product or a mineral resource, however, is not always a mineral. A cup of beef tea is an animal product, but not an animal. A smell of onions is a vegetable product, but not a vegetable. Most of the documents referred to were also incompetent because they used words in their scientific meanings.

The Board of Appraisers also referred to a statistical abstract published in 1891 which called it a "mineral," but Congress can not be presumed to have had this in prophetic vision when legislating in 1890.

(*d*) Judge Coxe, while basing his decision in main upon the scientific testimony, makes also the point that Congress could not have had natural gas in mind, and that "conceding the question to be doubtful, the doubt should be resolved in favor of the importer." Doubtless Congress did not have the gas in mind in 1890; but the residuary clause of our tariff acts has always been drawn, like the residuary clause of a will, so as to include whatever Congress may have overlooked, forgotten, or failed to foresee. The free list has always been confined to articles specially described. (See brief aforesaid, p. 14.) The presumption in favor of the importer was largely repealed by the act of 1890 (§ 5, last sentence). It was never applicable to the residuary clause. Rules of interpretation of specific enumerations are the same whether these enumerations are found in the dutiable list or the free list. If the article under consideration can not be brought within any of them, it falls naturally under the residuary clause, which needs no interpretation.

(*c*) Judges Lacombe and Shipman seem to base their decision mainly upon a certain series of publications which were not referred to in the prior decisions, nor yet in the importers' brief, and of which the counsel for the Government were not aware until they read the prevailing opinion of the Circuit Court of Appeals.

The Board of General Appraisers had, indeed, referred to the Statistical Abstract published by the Treasury Department for the year 1891. Its date, however, seemed sufficient to dispose of it, especially since it was used mainly as evidence of the scientific use of the word mineral.

The two learned judges above named, however, have discovered that natural gas was tabulated with other minerals in the corresponding publications for 1888, 1889, and 1890. Upon this their judgment is based, Judge Lacombe saying:

> In the table contained in the Statistical Abstract of 1888 minerals are divided into metallic and nonmetallic. Of the latter class 35 species are enumerated, and the sixth on the list is "natural gas," appearing between petroleum and cement. The same is true of the Statistical Abstracts of 1889 and 1890. It thus appears that the reports to which it is to be supposed that Congress refers for enlightenment as to the statistics of the products of this country used the word "minerals" in a sense broad enough to include natural gas, and if there be any doubt as to the ordinary meaning of that word, it is to be presumed that Congress, when legislating as to the rates of duty to be laid upon the products of other countries, used such word with a meaning equally comprehensive.

It has often been argued in tariff cases that the courts may take judicial notice of the customs decisions of the Treasury Department, which are officially published, and are known to be in the hands of every committeeman or other person engaged in the drafting of a tariff law; and that there is some presumption that words are used in the sense which has thus been attributed to them. The presumption has never before been extended to the statistical publications of the Government or to mere tabulations of figures.

These statistical abstracts are published by the Bureau of Statistics, which, although under the general jurisdiction of the Secretary of the Treasury, is entirely separated from the bulk of that Department, and even situated in a separated building. The abstracts consist entirely of tabulations of figures, and are not referred to the Committee on Ways and Means, but to the Committee on Printing.

A facsimile of the page here relied upon is annexed to this brief. The title in full (which is partly printed on the opposite page) is "Quantities and Values of Minerals Produced in the United States during the Calendar Years from 1882 to 1887, inclusive. [Prepared by the United States Geological Survey.]" It will be seen that among minerals are classed two gases, which would not be called minerals by the public in general, and as to whose proper classification as minerals scientific men are perhaps nearly equally divided in opinion; namely, natural gas and bromine. There is also included petroleum, which is not a mineral according to the vernacular, although so regarded by many scientific men, and also

No. 30.—Quantities and Values of Minerals produced in the United

[Prepared by the United

Products.	1882.		1883.	
	Quantity.	Value.	Quantity.	Value.
METALLIC.				
		Dollars.		*Dollars.*
Pig-iron, spot value (*a*).....long tons (*b*)..	4,623,323	106,336,429	4,595,510	91,910,200
Silver (*c*), coining value.....troy ounces..	36,197,695	46,800,000	35,733,622	46,200,000
Gold, coining value (*d*).....do....	1,572,186	32,500,000	1,451,249	30,000,000
Copper (*e*), value at New York City.....pounds..	91,646,232	16,038,991	117,151,795	18,064,807
Lead, value at New York City.....short tons..	132,890	12,624,550	143,957	12,322,719
Zinc, value at New York City.....do....	33,765	3,646,620	36,872	3,311,106
Quicksilver, value at San Francisco.....flasks (*f*)..	52,732	2,487,042	46,725	1,253,632
Nickel (*g*), value at Philadelphia.....pounds..	281,616	109,777	58,800	52,920
Aluminum, value at Philadelphia.....troy ounces..	(*h*)	.....	1,000	875
Antimony, value at San Francisco.....short tons..	60	12,000	60	12,000
Platinum, value (crude) at New York City, troy ounces.....	200	600	200	600
Total value of metallic products.....	.....	219,755,109	.....	203,128,859
NON-METALLIC (SPOT VALUES).				
Bituminous coal (*i*).....long tons..	60,861,190	76,076,487	68,531,500	82,237,800
Pennsylvania anthracite.....do....	31,358,264	70,556,094	34,336,469	77,257,055
Building stone.....	.....	21,000,000	.....	20,000,000
Lime.....barrels (*l*)..	31,000,000	21,700,000	32,000,000	19,200,000
Petroleum.....do (*m*)....	30,053,500	23,704,698	23,400,229	25,740,252
Natural gas.....	.....	215,000	.....	475,000
Cement.....barrels (*n*)..	3,250,000	3,672,750	4,190,000	4,293,500
Salt.....do (*o*)....	6,412,373	4,340,140	6,192,231	4,211,042
Limestone for iron flux.....long tons..	3,850,000	2,310,000	3,814,273	1,907,136
South Carolina phosphate rock.....do....	372,077	1,992,462	378,380	2,270,280
Zinc-white.....short tons..	10,000	700,000	12,000	840,000
Mineral waters.....gallons sold..	.....	.....	7,529,423	1,119,603
Borax.....pounds..	4,236,291	338,903	6,500,000	585,000
Gypsum.....short tons..	.....	.....	.....	.....
Manganese ore.....long tons..	3,500	52,500	8,000	120,000
Mineral paints.....do....	7,000	10,000	7,000	84,000
New Jersey marls.....short tons..	1,080,000	540,000	972,000	486,000
Pyrites.....long tons..	12,000	72,000	25,000	137,500
Flint.....do....	25,000	100,000	25,000	100,000
Mica.....pounds..	100,000	250,000	114,000	285,000
Corundum.....short tons..	500	80,000	550	100,000
Sulphur.....do....	600	21,000	1,000	27,000
Precious stones.....	.....	75,000	.....	74,050
Gold quartz, souvenirs, jewelry, etc.....	.....	75,000	.....	115,000
Crude barytes.....long tons..	20,000	80,000	27,000	108,000
Bromine.....pounds..	250,000	75,000	501,100	72,264
Feldspar.....long tons..	14,000	70,000	14,100	71,112
Chrome iron ore.....do....	2,500	50,000	3,000	60,000
Graphite.....pounds..	425,000	34,000	575,000	46,000
Fluorspar.....short tons..	4,000	20,000	4,000	20,000
Slate ground as a pigment.....long tons..	2,000	24,000	2,000	24,000
Cobalt oxide.....pounds..	11,653	32,046	1,096	2,795
Novaculite.....do....	.....	.....	.....	.....
Asphaltum.....short tons..	3,000	10,500	3,000	10,500
Asbestos.....do....	1,200	36,000	1,000	30,000
Rutile.....pounds..	500	1,800	550	2,000
Total value non-metallic mineral products....	.....	228,410,380	.....	242,111,889
Total value metallic products.....	.....	219,755,109	.....	203,128,859
Estimated value of mineral products unspecified (*q*).....	.....	8,000,000	.....	8,000,000
Grand total.....	.....	456,165,489	.....	453,240,748

a By "spot" value is meant value at the point of production.

b "Long" tons are tons of 2,240 avoirdupois pounds; "short" tons are tons of 2,000 avoirdupois pounds.

c $1.2929 per troy ounce.

d $20.6718 per troy ounce.

e Including copper made from imported pyrites.

f Of 76½ avoirdupois pounds net.

g Including nickel in copper-nickel alloy, and in exported ore and matte.

h Not reported.

i Including brown coal and lignite, and small lots of anthracite mined elsewhere than in Pennsylvania.

j The commercial product of bituminous coal, that is, the amount marketed, was only—

Years.	*Quantity.*	*Value.*
1882.....	57,963,038	$72,453,797
1883.....	65,030,171	78,036,205
1884.....	66,809,356	70,149,824
1885.....	63,569,284	80,640,564
1886.....	63,380,119	75,554,629
1887.....	75,454,464	94,230,752

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mineral waters. There are also included cement and mineral paints, which are not minerals either in the vernacular or in science, but are products of minerals.

The learned Circuit Court of Appeals discovered this tabulation by judicial notice, as it was not referred to in the record, or even in the brief. This court may take judicial notice of its original, as it purports on its face to come from the Geological Survey.

The tabulation is copied from a sheet issued annually by the United States Geological Survey, with only one change, namely, that the words "mineral products" used by the survey are changed to "minerals produced." It is supposed that this change originated in some accident, and has been reproduced each year according to the general custom of uniformity Upon such an accident is an important statutory definition made to depend.

The words "mineral products" are used instead of "minerals" by the survey for definite reason. According to the older and more general usage, no gas can be "a mineral." According to a recent system of terminology, now used by many, a gas can be a mineral, yet not all inorganic gases are minerals. A mineral is required to be homogeneous, and of a definite chemical composition, differing on the one hand from elements (such as bromine in the table), and on the other hand from heterogeneous non-chemical combinations of elements or minerals, such as air and rocks. To this last class natural gas and cement belong. All of these classes can properly be classified as "mineral products," as can artificial substances of inorganic origin (such as mineral paint in the table).

It is not intended here to criticize the propriety of placing these various gases, liquids, and mineral products under the head of "minerals produced." It is necessary for statistical convenience to classify them somewhere, and their analogy to minerals is near enough. Indian relics come under the loose definition of "mineral" adopted by the Ontario court, as above quoted; and in the Utah publication cited by defendant's principal expert witness, at p. 111 of the record, they are included in a tabulated list of minerals. This was also convenient enough for purposes of tabulation, but would hardly be regarded as expressing the tabulator's opinion as to questions of definition. It may be added that this paragraph of the tariff of 1890 is copied substantially *verbatim* from the tariff of 1883, paragraph 338; that natural gas had received no notice in any official publication at that date; and that, in copying the provision of 1883 Congress presumably intended its meaning to remain unchanged. (152 U. S., 371–2.)

It is submitted that no doctrine can be more dangerous in construing the tariff laws than that here announced by the court, which would require the Ways and Means Committee to search through all the publications of the various Government bureaus, in order to guard against strange uses of common words. The only safe rule is that which has frequently been laid down by this court, namely, that words having no technical meaning in trade or manufacture are used in their "ordinary and commonly accepted sense." (156 U. S., 602.)

Judge Lacombe also refers to "the various official publications of the Federal Government set forth in the

record," but these use (and in a scientific sense), not the word "mineral," but "mineral product," or "mineral resource," very much wider terms. (See *c*, *supra*.)

(*f*) Judge Wallace agrees with us in the positions above taken. He, however, is of opinion that natural gas should be classified as *bitumen*. If there had been any argument of this question, we feel confident that the learned judge would have held otherwise; and had the majority of the court decided the case upon this ground, we would have with confidence applied to it for a rehearing instead of making application for a writ of *certiorari* here.

The evidence upon which the bitumen theory is based was that of the importer's main expert witness, Vandenbergh, given April 22, 1892 (pp. 15 et seq.), and a long brief prepared by Vandenbergh, and dated May 7, 1892 (pp. 93–126). The next two witnesses admitted rather hesitatingly that *scientifically* natural gas might properly be termed bitumen (pp. 36, 42). After this the bitumen theory was dropped, and it was not raised with the later witnesses upon direct examination or upon cross-examination.

It was expressly disapproved by the Board of Appraisers. It was not alluded to in the importers' brief on the appeal.

Judge Wallace's decision is based on a report of one S. F. Peckham, a special agent employed by the Census Bureau of 1880, to prepare a report on the "production, technology, and uses of petroleum and its products." Mr. Peckham, after giving the ordinary classification of

bitumen (both vernacular and scientific), adds "gaseous—natural gas" (p. 93). This is unsupported by any authority that we are able to find, and that we have made a sufficiently complete examination of the authorities we assume from the fact that the position was abandoned by the importer's counsel.

The Century Dictionary defines bitumen as follows:

> The name given by Latin writers, especially by Pliny, to various forms of hydrocarbons now included under the names of *asphaltum, maltha, and petroleum* (see these words). [Maltha is equivalent to mineral tar.]

Webster's Dictionary (1890) defines it as follows:

> 1. Mineral pitch [describing same].
> 2. By extension, any one of the natural hydrocarbons, including the hard, solid, brittle varieties called asphalt, the semisolid maltha and mineral tars, the oily petroleum, and even the light, volatile naphthas. [Naphtha is defined by him as a liquid.]

Worcester's Dictionary (1870) defines it as follows:

> The name of several inflammable mineral substances, as *mineral pitch, naphtha, mineral tar, asphaltum* or *asphalt, elastic bitumen* or *mineral caoutchouc, jet, mineral coal*, etc.

The American Cyclopædia has substantially the same description. The Encyclopædic Dictionary gives bitumen as the equivalent of asphalt or asphaltum.

Dr. Vandenbergh's claim that natural gas is bitumen is apparently based mainly upon the fact that they are both based upon hydrocarbons. That such evidence as this would bring all the products of organic chemistry

into the free list is inferable from the definition of hydrocarbon in the Century Dictionary:

> A compound of hydrogen and carbon; the general name of any compound consisting of hydrogen and carbon alone. The hydrocarbons are an exceedingly large and important group of compounds, *and with their derivations form the subject-matter of organic chemistry.*

The quotation from McCullough's Commercial Dictionary in Judge Wallace's opinion is correct, but immaterial. It does not include or apply to natural gas.

Considerable attempt was made to show that natural gas is on the free list because it is paraffine. That claim is irrelevant to the present proceeding, and is based on the fundamental error of supposing scientific definitions to be applicable. Whether natural gas is paraffine in science is a matter of much doubt. The commercial article, formerly familiar through paraffine candles, is altogether different. (38 U. S. App., 17.)

It is respectfully submitted that a writ of *certiorari* should be issued.

A certified copy of the entire record of the case in the Circuit Court of Appeals, including the opinions, is filed as part of this application. Notice of the application has been given to the appellee's counsel.

HOLMES CONRAD,
Solicitor General.
EDWARD B. WHITNEY,
Assistant Attorney General.

No. 61.

By ...

Filed ... 25, 1891.

In the Supreme Court of the United States.

OCTOBER TERM, 1891.

THE UNITED STATES, APPELLANT,
v.
THE BUFFALO NATURAL GAS FUEL COMPANY. } No. 61.

In the Supreme Court of the United States.

OCTOBER TERM, 1898.

THE UNITED STATES, PETITIONER,
v.
THE BUFFALO NATURAL GAS FUEL COMPANY. } No. 64.

ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SECOND CIRCUIT.

STATEMENT.

This case comes before the court on certiorari to the circuit court of appeals for the second circuit. It is a proceeding under the Customs Administrative act of 1890 to review the decision of the collector of customs at the port of Buffalo, N. Y., as to the rate and amount of duties chargeable upon natural gas imported into the United States from Canada during August and November, 1891, the gas being obtained by drilling into the earth and, after conveyance through pipes laid along the earth and across the Niagara River, used in Buffalo in the same form in which it is taken from the earth. (Rec.,

p. 15.) The collector classified the importation as dutiable at 10 per cent under section 4 of the tariff act of October 1, 1890, which is as follows:

> That there shall be levied, collected, and paid on the importation of all raw or unmanufactured articles, not enumerated or provided for in this act, a duty of 10 per cent ad valorem; and on all articles manufactured in whole or in part, not provided for in this act, a duty of 20 per cent ad valorem.

The importers protested, claiming that natural gas is not an article within the meaning of the tariff act of 1890, and that it is free of duty as crude bitumen under paragraph 496 or as a crude mineral under paragraph 651 of said act, which are as follows:

> 496. Asphaltum and bitumen, crude.
>
> 651. Minerals, crude, or not advanced in value or condition by refining or grinding, or by other processes of manufacture, not specially provided for in this act.

Upon a similar protest by the same importers of earlier date (p. 74), the Board of General Appraisers affirmed the decision of the collector overruling the contentions of the importers that natural gas is not an "article," but is a crude bitumen or a crude mineral. Upon the present protest the board took evidence at special hearings under a stipulation that the evidence should apply to a protest "hereafter to be filed" (p. 8) claiming the gas to be a crude paraffine as well as a crude bitumen or crude mineral. Paragraph 671 of the act of 1890 admits "paraffine" free. No such additional protest appears to have been filed, although subsequently "like protests on

similar merchandise were made at the same port" (p. 72). After taking the testimony, the Board of General Appraisers rendered a decision (p. 72) reaffirming the ruling of the prior decision that natural gas is an article and is not crude bitumen, but reversing the collector and sustaining the importers on the contention that it is a crude mineral and exempt from duty under paragraph 651 of the act of 1890, resting their conclusion upon the preponderance of testimony as to the scientific import of the word "mineral" and upon a decision of the Ontario courts to the effect that natural gas falls within the meaning of minerals.

The collector then applied to the circuit court for a review of this decision, which court (Coxe, J.) affirmed the same (p. 81) on the grounds that the question whether natural gas is a crude mineral is a question of fact, and that the finding upon the facts of the Board of General Appraisers, a body of trained experts, who had considered the question with unusual care, should not be lightly set aside; that had it been the intention of Congress to impose duty upon this volatile product of nature (which the court doubts), it is difficult to believe that it would have been left to the "catch-all" clause of the act of 1890. Upon appeal by the United States to the circuit court of appeals, the judgment of the circuit court was affirmed, Judges Shipman and Lacombe (p. 86) basing their opinion upon the scope and meaning of the words "crude minerals," as used by Congress and as drawn from certain statistical abstracts of the Treasury Department, but not undertaking to decide whether or not natural gas is a "crude bitumen," while Judge Wallace

(p. 88) concurred in the affirmance, but not for the reasons given in the prevailing opinion, holding that while in scientific classification natural gas may be considered a mineral, in the tariff act the term minerals is to be read in its common acceptation, and does not include a gas; but nevertheless he places it under crude bitumen as a more specific description than crude minerals, and because, according to the testimony in his opinion, bitumen, a generic term applied to a large number of natural substances which consist chiefly of hydrocarbons, may be gaseous, fluid, viscous, or solid.

THE TESTIMONY.

The testimony on behalf of the importers was chiefly scientific and expert in character. It showed the chemical analysis of the gas to be as follows (p. 9):

	Per cent.
Methane, or marsh gas	95.6
Ethylene, propylene, and butylene	1.6
Carbon monoxide	.2
Carbon dioxide	.6
Hydrogen	.6
Oxygen	.8
Nitrogen	.6

By the testimony of Dr. Vandenbergh, one of the importers' witnesses, it appears that natural gas is not of uniform and definite composition. Its main constituents vary. It is claimed to be chemically a crude paraffine, because it consists almost entirely of methane, which is the type of all paraffines. The paraffines are a series of definite compounds consisting of carbon and hydrogen, and differing from one another in the relative proportion of those elements contained. The paraffine class of

hydrocarbons may be grouped in a series differing by a steady increment of carbon and hydrogen atoms, increasing the density and carrying the series from gaseous through liquid and viscid to hard, compact substances (p. 10). If natural gas consisted only of methane, it would be typically paraffine. Similarly it is a crude bitumen, because bitumens are mixtures of hydrocarbons of various kinds mixed with other materials in varying proportions and constituting an ascending series from the gaseous condition of methane or marsh gas, including the viscous condition of tars and the elastic forms of the asphalts, to the coals (p. 11). There is no conflict in classifying natural gas under both terms, because matter is made up of elements or compounds or mixtures thereof, and the hydrocarbons are the most numerous class of these compounds, of which the paraffines are one series and the bitumens a larger series, including the paraffines (p. 12). The evidence that natural gas is a crude mineral proceeded on the same lines and relied on the "consensus of opinion of other chemists whose investigations and experience entitles their judgment to confidence." Natural gas is obtained from the mineral portion of the earth without being subjected to artificial treatment, and issues from it in a manner comparable with the way in which crude bitumens such as asphalt ooze therefrom (p. 13).

The similar testimony for the Government showed that the paraffine or paraffine wax of commerce is a product of the distillation of petroleum, but that the foregoing conception of a paraffine series from a scientific and chemical standpoint is true (pp. 17, 24, 25, 28, 31).

The word "paraffine," however, considered commercially, only covers the one article known in commerce as a solid mixture of various hydrocarbons of a white and waxy appearance (pp. 42–44). Crude mineral, which is generally accepted as an inorganic substance obtained by mining, would not include natural gas (p. 18). The accepted definition of mineral is something that has solid form, which can be weighed and handled. Natural gas is not an inorganic substance, and would not ordinarily be accepted as a mineral (pp. 19, 47–50). The gas is composed of organic substances. Coal is organic, and, though called a mineral, is outside the strict definition (p. 20). To the same effect are the statements of other Government witnesses as to the distinction between the scientific and ordinary or commercial understanding of paraffine, bitumen, and mineral.

One witness for the importers testified (pp. 34, 35) that there was no one substance known commercially as paraffine, and the word would include the whole series of paraffine products, gaseous and liquid as well as solid, some produced by nature's methods and some by artificial distillation. A Government witness thought that scientific definition would admit of variations; that the strict definition of mineral is any inorganic substance having a definite chemical composition and usually possessing a definite geometrical form. Minerals are almost invariably solid; in a few exceptions they may be liquid, as mercury or water. There is a wider definition which, according to some authorities, or one authority, embraces all the constituents of the earth's crust, including gases.

Scientific men usually employ the word "mineral" as a noun according to the narrower definition and not as a synonym for "mineral substance" (p. 37 *et seq.*).

Few scholars would speak of a gas as a mineral, but as belonging to the mineral kingdom. Ordinarily the term is used for that which is solid, but this would not be exclusively so. Major Powell, of the United States Geological Survey, testified that he had included natural gas in various reports and statistical abstracts as a mineral, or nonmetallic mineral, not upon a strict classification, but because it was a mineralogical resource or a geological product. Another Government witness (pp. 51, 52) considers that there are different uses of the word "mineral" among scientists, and that as more usually employed by them it would include gas. There was also evidence upon the question whether natural gas is obtained by "mining" or a mining process or by "boring" (pp. 50, 52, 53). Certain citations were appended to the testimony by the importers (Rec., p. 54 *et seq.*, Exhibit N) to show the generic use of the terms mineral, paraffine, and bitumen, in which various historical facts and scientific views and proceedings are submitted as to the volatile, liquid, viscous, and solid conditions of those substances, and as to their chemical or organic origin, with references to governmental bulletins and statistical abstracts and classification thereunder.

ARGUMENT.

The testimony in the record as to paraffine is not strictly applicable to this case, because the question as to paraffine is not raised in the protest, and therefore is not

germane to the present proceedings. *Herman* v. *Robertson*, 152 U. S., 521; *Presson* v. *Russell*, 152 U. S., 577. Because, however, of the general relation between paraffine and bitumen, and because the arguments sustaining the importers' contention are similar in each case and also include minerals, and the reply thereto is based upon reasoning largely applicable to all three substances, the line of testimony as to paraffine has been indicated.

(*a*) *The terms "bitumen" and "minerals" must be taken in their ordinary signification and not in the scientific sense.*

No principle is more firmly settled than this in the construction of tariff acts. If there is a commercial meaning of terms differing from the ordinary meaning, the inquiry for tariff purposes is to ascertain the commercial meaning. The commercial meaning, however, is presumed to be the ordinary meaning, unless there is clear evidence that the two meanings differ, and that the intention is not to use the term in its usual sense. Congress must be understood to use words in their known commercial sense, and in the interpretation of revenue laws words are to be taken as in their commonly received and popular sense, or according to their commercial designation, if that differs from the ordinary understanding of the word, particularly if the scientific definition contradicts the popular idea of the article in question. When scientific definitions obtain, it is usually because they have become commercial designations. It is not their scientific origin or character, but the commercial adaptation which makes them significant and controlling. (*Two Hundred Chests of Tea*, 9 Wheat., 430; *Arthur* v.

Butterfield, 125 U. S., 70; *Robertson* v. *Salomon*, 130 U. S., 412, 414; *Mason* v. *Robertson*, 139 U. S., 624, 627; *Am. Net and Twine Co.* v. *Worthington*, 141 U. S., 468; *Lutz* v. *Magone*, 153 U. S., 105; *Sonn* v. *Magone*, 159 U. S., 417; *United States* v. *Breed*, 1 Sumn., 159, 164.)

It is not intended to argue that scientific expert testimony is incompetent in any tariff case. In many controversies scientific evidence may be important as determining the true character of the article imported, and when Congress has used a commercial designation taken from science, as is often the case when articles of science become also articles of commerce, the recognized expositors among traders, as well as in the courts, will be scientific men; but it is the transfer of the scientific term to the language of legislation and commerce which varies the general rule that scientific expert testimony is not admissible to effect the meaning of the words used in a tariff law. These principles have been applied in the case of *Lutz* v. *Magone* (*supra*), very similar to the present one, where the question arose whether saccharine was an acid. Chemically speaking, the classification as an acid was correct, but the court, reaffirming the principle that in revenue laws words are to be taken in their popular or commercial sense, or according to their commercial designation, used the following language (pp. 108–9), which we contend is exactly applicable in principle to this case, and properly disposes in favor of the Government of all the contentions of the importers herein:

> Whether a particular article were designated by one name or another, in the country of its origin, or

> whether it were a simple or mixed substance, was of no importance in the view of the legislature. It did not suppose our merchants to be naturalists, or geologists, or botanists. * * * Particularly is this the case, when the scientific designation contradicts so directly the popular idea of the article in question as it does in the case of saccharine. To speak of a substance as an acid, which is admitted to be three hundred times as sweet as sugar, is to confuse all our natural impressions with respect to the relative qualities of acidity and sweetness. These terms should be received in their ordinary acceptation. * * * To class saccharine as an acid, because it imparts a reddish color to litmus paper, is to make an accidental and occult property of the article dominate its well-known and popular quality of sweetness, for which it is exclusively used. In the Encyclopædia Britannica flint is said to be a "true acid, because, when it is heated along with soda or lime, it forms the new body commonly called glass, which is chemically a salt of silicic acid." It would be little less, however, than an abuse of terms to classify flint as an acid for revenue purposes. * * * We do not wish to be understood as holding that in no case will the scientific designation of an article be of value in fixing its proper classification for duties, but that in a case where the popular idea of an article and its actual use in the arts are so diametrically opposed to its scientific designation the latter should not prevail.

So in this case it can not be claimed, consistently with this decision, that natural gas, "this volatile, invisible, and imponderable product of nature," to adopt the language of Judge Coxe, is a bitumen or a mineral in the ordinary acceptation of these terms. Although, because

of chemical relations, there may be an affinity between certain natural or artificial compounds embracing substances which range from gas to rock, it would be an abuse of terms to classify natural gas as a bitumen or a mineral for revenue purposes. Furthermore, the word "minerals" in tariff acts has been settled by the case of *Marvel* v. *Merritt* (116 U. S., 11) to have no technical character or bearing, and therefore it is not properly subject to modification by expert testimony. In that case the question arose whether iron ore was dutiable under the head of minerals and bituminous substances in a crude state. The court said (pp. 11–12):

> On the trial below the plaintiff offered evidence to show that iron ore was known to the trade commercially only under that name, and that scientifically considered it was a metallic and not a mineral substance, but the offer was rejected by the court. * * * The words used are not technical, either as having a special sense by commercial usage, nor as having a scientific meaning different from their popular meaning. They are the words of common speech, and as such their interpretation is within the judicial knowledge, and, therefore, matter of law.

"Mineral" is thus placed in the list of nontechnical terms, and as such is not subject to expert testimony like the terms before the court in *Maillard* v. *Lawrence* (1 Blatchf., 504; 16 How., 251); *Binns* v. *Lawrence* (12 How., 9); *Newman* v. *Arthur* (109 U. S., 132, 138); *Magone* v. *Heller* (150 U. S., 70, 73, 74); *Patton* v. *United States* (159 U. S., 500, 506).

(*b*) *The ordinary acceptation of the terms "bitumen" and "minerals" does not include natural gas.*

Turning to the encyclopedias and dictionaries, the Encyclopedia Britannica, volume 18, page 237, shows that paraffine was first applied to a solid obtained by dry distillation of wood, and received its name (*parum affinis*) because it was endowed with an extraordinary indifference to reagents; and, then, since the products of petroleum as well as paraffine are hydrocarbons, the term was extended to the marsh gas series of hydrocarbons, but paraffin was a "colorless, waxlike solid."

> Webster: *Paraffin.* A white, waxy substance resembling spermaceti, tasteless and odorless, and obtained from coal tar, wood tar, petroleum, etc., by distillation. * * * It was formerly regarded as a definite compound, but is now known to be a complex mixture of several higher hydrocarbons of the methane or marsh-gas series. Hence, by extension, any substance, whether solid, liquid, or gaseous, of the same chemical series. Thus coal gas and kerosene consist largely of paraffins. * * * In the present chemical usage this word is spelled "paraffin," but in commerce it is commonly spelled "paraffine."
>
> The Century Dictionary: *Paraffin.* 1. The collective name for compounds of the marsh-gas series. * * * 2. Specifically, in commerce and manufacture, a substance obtained by the distillation of wood, peat, bituminous coal, wax, etc. It is a tasteless, inodorous, fatty matter. * * * It is largely used in the manufacture of candles. * * * and also as a waterproofing material. * * * One of the main sources of paraffin is crude petroleum, which yields a considerable quantity during its preparation for market.

As to bitumen, it can not be designated by any chemical formula. Certain substances have been called bitu-

mens, principally because they contain elements which are combustible, and by extension the word has been applied to many substances, such as natural pitch, wax, coal, resin, etc., out of which inflammable elements may be extracted. In the Encyclopædia Britannica bitumen is not treated under that head, but reference is made to asphalt (vol. 2, p. 715), which is connected with the bitumen of Pliny and with mineral pitch, and described as usually found of a black or brownish-black color, externally not unlike coal, but varying in consistency from a pitchy condition, with a sharp conchoidal fracture, to thick viscid masses, and is regarded as the ultimate result of a series of changes taking place under certain conditions in organized matter producing, successively, naphtha, petroleum, mineral tar, and asphalt or hard bitumen.

Under the title "Chemistry," in the Encyclopædia Britannica (vol. 5, p. 579), bitumen is called an unclassified organic compound, resulting from a decay of the vegetable matter out of contact with the air. Coal, lignite, and jet are allied to it. The dictionaries refer to bitumen generally as a pitch, synonymous with asphalt, and it is so treated in the free-list provision in the act of 1890. Webster defines "bitumen":

> 1. Mineral pitch; a black, tarry substance, burning with a bright flame; * * * It occurs as an abundant natural product in many places. * * * It is used in cements, in the construction of pavements, etc. (See "Asphalt.")
>
> 2. By extension, any one of the natural hydrocarbons, including the hard, solid, brittle varieties called asphalt, the semisolid maltha and mineral tars, the oily petroleums, and even the light, volatile naphthas.

Webster's definition of "asphalt" is to the same effect.

> The Century Dictionary: *Bitumen.* The name given by Latin writers, especially by Pliny, to various forms of hydrocarbons, now included under the names of asphaltum, maltha, and petroleum.

The Century Dictionary defines asphalt (referring to it as derived from the Greek word meaning asphalt)—bitumen, a word of undetermined foreign origin, as a bituminous material employed for pavements and floorings, and as a cement.

As to mineral, Webster's definition is:

> 1. An inorganic species or substance occurring in nature, having a definite chemical composition and usually a distinct crystalline form.

The Century Dictionary:

> Any constituent of the earth's crust; more specifically, an inorganic body occurring in nature, homogeneous, and having a definite chemical composition which can be expressed by a chemical formula. * * *
>
> 2. Having the nature or character of a mineral as defined above. Obtained from a mineral or minerals. Belonging to the class of minerals, etc.

The Encyclopædia Britannica, under the title "Mineralogy" (vol. 16, p. 346), says that mineral bodies occur in the three conditions—solid, liquid, and gas. Those found in the last two states are few in number and are of altogether inferior interest to those which occur as solids, but there is reason to believe that the minerals we know as solids once existed in the liquid or gaseous state, and that their present structure was determined in the process of solidification. Bitumen is described in this title

(p. 428) as one of the "mineral resins," as only vegetable resins slightly altered. Naphtha is fluid; the others solid.

Chemical authorities do not class the compounds which are known as paraffines, bitumens, or minerals with any degree of accuracy, and there are many authorities of high standing which do not support the view that the gaseous forms of the hydrocarbon series are paraffines or bitumens, respectively, or that gases are to be classified as minerals. It is true that the authorities quoted by the importers' expert in his paper, included in the record as Exhibit N, and other authorities support the view that terms in the science of mineralogy or geology include the liquid gases which occur naturally on the surface or in the interior of the earth, and one reason given for this is that, although the term mineral may not be strictly applicable to them, they are none the less natural substances which can not be comprised among others that are formed by the aid of vital forces.

But while this view may be necessary or appropriate as a matter of scientific scholarship, it can not be urged practically that the terms "paraffine," "bitumen," and "mineral" include, to the ordinary understanding or in the daily conduct of life, anything else than solids having a definite form and a well-ascertained composition. The analytical steps from the gaseous or ethereal to the solid form of these substances have been taken now under accurate scholarship with pretty certain knowledge of the elements contained, although there is some conflict of views, and the matter can not be regarded as fully settled even scientifically. The subject, however, still suggests

to the ordinary understanding some appeal to the scientific imagination and to hypothesis, which, in advance of definite knowledge, are seeking to bridge even larger gaps in the universe.

The definitions, then, show that in common parlance the terms involved here are to be taken in accordance with the Government contention. Those definitions on any true classification are the primary definitions, although the Board of General Appraisers state that lexicographers give the word "mineral," in its primary and broader sense, the definition which would embrace natural gas, although their secondary and limited definitions would not. The primary definition, whatever its number may be in the authorities cited, would be the ordinary, usual definition, and the secondary definition would be the special or derived or scientific definition. The scientific definition is not primary because the broadest. In the view of the law the scientific definition, although it may extend the domain comprehended in the term, is the less important and the narrower definition because it has a limited and less extensive application in the affairs of ordinary life.

It has been established for a long time that the legal definition should be the same as the vernacular meaning. In general, statutes are presumed to use words in their popular sense—*uti loquitur vulgus*. (Maxwell on Statutes, 2d ed., p. 69; *The Fusilier*, 3 Moore, P. C. C., N. S., 51, 58; 1 Kent's Commentaries, 462; Endlich on Interpretation of Statutes, sec. 2, 76, 78; Potter's Dwarris on Statutes, p. 143; *Maillard* v. *Lawrence*, 16 How., 250, 261; *School Directors* v. *Bank*, 8 Watts, 289, 291.)

(c) *The scientific usage is not firmly settled.*

But even if it should be admitted for the sake of argument that the view of science is to be regarded here, the scientific usage as to the extent of the terms is not sufficiently definite and uniform. Even the commercial usage is of no avail in a tariff case if it is not definite as well as uniform and general. This is the particular application of a rule applying to all customs and usages when invoked for the purpose of modifying a statute or contract. (*Maddock* v. *Magone*, 152 U. S., 368, 371; *Berbecker* v. *Robertson*, 152 U. S., 373, 376; *Sonn* v. *Magone*, 159 U. S., 417, 420, 421; *Patton* v. *United States*, 159 U. S., 500, 506; Endlich on Interpretation of Statutes, sec. 362; *Dickinson* v. *City of Poughkeepsie*, 75 N. Y., 65, 77; *Garrison* v. *Memphis Ins. Co.*, 19 How., 312, 317; *Rapp* v. *Palmer*, 3 Watts, 178; *Adams* v. *Pittsburgh Ins. Co.*, 76 Pa. St., 411; *Schurr* v. *Savigny*, 85 Mich., 144.)

Now, it appears quite clearly from the testimony in the record, and from the paper in the nature of a brief submitted on behalf of the importers, that the alleged scientific understanding and usage is by no means clearly established and universally accepted. One witness (pp. 37, 38) is of opinion that even scientific definition may admit of variations; that there is sometimes a difference between the mineralogical and chemical sense of a word; that the strict scientific definition of the term "mineral" which a mineralogist would use is any inorganic substance having a definite chemical composition and usually possessing a definite geometrical form; that in this mineralogical definition of the sense of the word gases are not

included; and that the usual sense in which the word is used by scientific men is the narrower definition excluding gases. And this witness, stating that the scientific use of the term is the same in German as in English (p. 45), quotes (p. 40) from a German authority upon mineralogy (Naumann-Zirkels's Elemente der Mineralogie) the statement that a mineral must be a homogeneous solid or liquid inorganic body, and that from the mineral kingdom are therefore excluded all gases and vapors which belong to the atmosphere.

It may well be, however, that gases and vapors belong to the mineral kingdom or are mineral products without being minerals. The fact that natural gas is little known in Germany can not be held to impeach seriously such abstract views based upon chemical analysis and laboratory research, and taking into account universal facts and relations.

It is also shown in the testimony (p. 45) that Watts's Dictionary of Chemistry, a standard authority, states that the term "mineral" in its wider sense denotes any substance not formed by the processes of organic life, but in its more restricted and more usual sense it signifies any homogeneous solid or liquid inorganic body formed by natural processes without the concurrence of art. There seems to be no doubt that the whole range of substances in the natural gas, petroleum, and coal series are organic in their nature and origin as having been formed by natural processes from living organisms existing a long time ago. To the same effect is the testimony of Major Powell, of the United States Geological Survey (pp. 46–47).

The witness considers that there are two scientific uses of the word mineral, of which the one excluding gases is the more usual of the two. He also would exclude natural gas on the ground that it could not properly be called a mineral substance because it is of organic origin; and as to gases admitted to be inorganic, he thinks (p. 50) that ordinarily scientific men would not speak of air as a mineral, nor of gas as a mineral, by common usage. And another witness (p. 51), while inclining to the view of the importers, thinks that some scientific men understand one thing and some another; that the use is not fixed, and it is impossible to give a definition that would hold. So, in the brief or treatise referred to, which is largely historical, and refers to discoveries, experiments, and scientific hypotheses upon the origin of bitumen and paraffin, it is evident that the scientific views are not settled; that there is as yet no well-established consensus of opinion upon the points involved; that the theories upon the subject are yet largely tentative. On page 70 a quotation is given from Dana's Mineralogy, in which the following words appear:

> The atmosphere and all gaseous materials set free in volcanic and other regions are mineral in nature. * * * It is sometimes said that minerals belong to the mineral kingdom, as plants to the vegetable kingdom and animals to the animal kingdom. Substituting the term "inorganic" for "mineral," the statement is right. For as there are two kingdoms of life, so there is in nature what may be called a kingdom of grand division, including all species not made through the organizing principles of life. But this inorganic kingdom is not restricted to minerals.

> It embraces all species made by inorganic forces; those of the earth crust or surface, and also whatever may form under the manipulations of the chemist. * * * A species made of art * * * is not a product of art, but a result solely of the fundamental laws of composition, which are the basis of all materials in existence. * * * Mineral species are, then, but a very small part of those which make up the inorganic kingdom or division of nature.

Now, it might be argued that natural gas does not belong even to the mineral kingdom, because it is organic in its nature according to the better established theories of its origin. It certainly is shown by this authority and by other authorities, speaking of the classification of all substances in the universe, that, as the inorganic kingdom is not restricted to minerals, a substance is not to be classified as a mineral merely because it belongs to that kingdom. Minerals or mineral species are but a very small part of those which make up the inorganic kingdom. Brande and Cox's Dictionary of Science, Literature, and Art, under the heading "Mineralogy," implies that the term "mineral" is not strictly applicable to gases, although they are none the less natural substances which can not be comprised among others which are formed by the aid of vital forces (p. 71).

An authority much relied upon by the importers, and who is frequently quoted and referred to by their expert witness, Dr. Vandenbergh, namely, Prof. S. F. Peckham (Rec., pp. 14, 15, 56, 60, 61), in his Report on Petroleum and its Products (Tenth Census of the United States, Vol. X, Special Report on Petroleum, etc., p. 55) says that the products are essentially paraffine products, using

the term in its generic sense from marsh gas upward, and the classification of the whole series as paraffines appears from him to be due to the fact that the English chemist H. Watts proposed, and others have followed him, in the view that an examination of paraffine in its chemical relations showed that it was one of the higher homologues of marsh gas, and hence embraced the whole series under the one term, including the solid, liquid, and gaseous members.

(*d*) *The decisions in the case by the Board of General Appraisers and in the courts below.*

The various grounds upon which the rulings of the Board of General Appraisers and the decisions in the courts below proceed clearly show the difficulties and inconsistencies which are met as soon as we leave the solid ground of the principles just cited. Congress certainly did not intend this article to come in free, indifferently as a crude bitumen or a crude mineral, or, it might be added (because the basis of argument is the same), as a crude paraffine. And that is the position at which we arrive, if scientific theories as to the common properties and relations of polymorphic substances are to rule.

The general appraisers determined the case by the scientific view of mineral, upon a decision of the Canadian courts, and because natural gas is classified by certain Government and State authorities as a mineral or mineral product or mineral resource. Judge Coxe thought the finding of the board conclusive as a question of fact, and resolved any doubt which might exist in favor of the importers. Judges Shipman and Lacombe disregarded the scientific acceptation, but thought there was

sufficient in the record as to the use of the term in official publications to show some modification of the ordinary signification in the mind of Congress when the act was passed. And Judge Wallace declined to adopt any of the foregoing reasons and rested his conclusion on the meaning and extent of the term "crude bitumen." Taking these up in their order—the reasons for excluding the widest scientific definition of mineral and the extreme scientific view of bitumen have been stated.

The Canadian decision, reported on appeal as *Ontario Natural Gas Co.* v. *Gosfield* (18 Ont. App., 626), was based upon the expert testimony in that case, which is not found in this, and upon an English definition of minerals in *Hext* v. *Gill* (L. R. 7 Ch. App., 699, 712). Scientific testimony in this case is incompetent, as we have argued. The English decision did not strictly define, but held that a reservation of minerals may include everything which can be got from underneath the surface of the earth for the purpose of profit. This is broad enough to support the decision if "substance," in view of the facts in that case, can be held to include a gas. But the English case, which involved "china clay," turned upon the point whether a thing obtained by quarrying rather than mining may be included under a reservation of minerals. The authorities cited in the case present the same question, and turn largely upon the special facts involved.

The deed in the Hext Case reserved the right "to dig and search for, take, use, and work the said excepted mines and minerals," words which would hardly be claimed to be applicable to a gas. The Hext definition

has been cited in later cases relating to flints, clay, sand, and other substances. (*Tucker* v. *Linger*, 21 Ch. D., 18, 35, 36; *Attorney-General* v. *Mylchreest*, 4 App. Cas., 294, 307; *Loosemore* v. *Tiverton Ry. Co.*, 22 Ch. D. 25, 42; *Midland Ry. Co.* v. *Haunchwood Co.*, 20 Ch. D., 552, 555; *Attorney-General* v. *Tomline*, 5 Ch. D., 750, 762, 763), and has been broadly questioned in recent cases. (*Elwes* v. *Brigg Gas Co.*, 33 Ch. D., 562, 566; *Lord Provost* v. *Farie*, 13 App. Cas., 657; *Earl of Jersey* v. *Guardians of the Poor*, 22 Q. B. D., 555).

In the case of *Lord Provost* v. *Farie*, in the House of Lords (wherein clay was held to be a mineral within the meaning of a certain statute), the lord chancellor approves a definition under Scotch law as substances and *strata* ordinarily known by the denomination of minerals in certain contracts. And the lord chancellor regrets (p. 673) that the test of James, L. J., in *Hext* v. *Gill*, was not adhered to. This test was the meaning "*in the vernacular* of the mining world and commercial world and land owners" at the end of the last century. Lord Herschell's dissenting opinion in the Farie Case (p. 683) only went to the extent of holding that in the widest sense of minerals as importing, *prima facie* and apart from context, all substances other than the vegetable matters forming the ordinary surface of the ground, clay is a mineral. He thought the "popular use of the word is often narrower."

In *Earl of Jersey* v. *Guardians of the Poor* (*supra*), three of the justices held that the Hext definition had not been overruled, but this was held in reference to a conveyance which was asserted to include brick, earth,

and clay in "all other mines and minerals whatsoever, except stone quarries." Lord Bowen, one of the justices, cites as one of several definitions substantially equivalent to the Hext definition, Lord Romilly's statement in *Midland Ry. Co.* v. *Checkley* (L. R., 4 Eq., 19, 25), which is—

> * * * Everything except the mere surface, which is used for agricultural purposes; anything beyond that which is useful * * * whether * * * gravel, marble, fire clay, or the like, comes within the word mineral, when there is a reservation of mines and minerals from a grant of land; every species of stone, whether marble, limestone, or ironstone, comes, in my opinion, within the same category.

Lord Bowen also thinks (Earl of Jersey Case, p. 562) that Lord Herschell, in the Farie Case, obviously used the exact language of Lord Mellish in the Hext definition, or an abbreviation of the latter's words, by which he appears to refer to the language on page 685 of the Farie Case, where Lord Herschell uses the words "mineral substances lying together in seams, beds, or strata." Parke, B., in *Earl of Rosse* v. *Wainman* (14 M. & W., 859), holds that "minerals" includes "all fossil bodies or matters dug out of mines," and embraces beds of stone which may be dug by mining or quarrying.

These cases imply that the English courts have been slow to extend the word "minerals" beyond the former meaning in common parlance of metals or metalliferous substances, and we respectfully submit that they give no countenance to the Ontario decision that natural gas is a mineral.

The American cases and authorities have dealt with oil and gas for a long time, and may be generally regarded as occupying more advanced ground than the English cases. While natural gas, like pretroleum, has been known among the curiosities of history and experimentally from early days, they have come into practical use in comparatively recent times. Natural gas began to be employed industrially about 1880, and the use became wide in the decade between 1880 and 1890. The question, however, as to importation did not arise until the latter date.

Bouvier's definition of "minerals" is:

> All fossil bodies or matters dug out of mines or quarries whence anything may be dug, such as beds of stone, which may be quarried; any natural production, formed by the action of chemical affinities, and organized when becoming solid by the powers of crystallization.

Bouvier further states that the term has been held to include coal oil. The case of *Thompson* v. *Noble* (3 Pittsb., 201, 204) has so held. In *Funk* v. *Haldeman* (53 Pa. St., 229, 248) it was said that the courts would probably treat coal oil as a mineral, and in *Stoughton's Appeal* (88 Pa. St., 198, 201) the court said: "Oil, however, is a mineral, and, being a mineral, is part of the realty." It may, however, be part of the realty even if it can not properly be described as a mineral.

In *Kier* v. *Peterson* (41 Pa., 357), under a lease with the privilege of boring salt wells, it was held that the lessee was entitled to petroleum which rises to the surface with the salt water, the opinion of Woodward, J., holding

however, that the lessor was entitled to compensation and an account for the oil.

In *Kitchen* v. *Smith* (101 Pa., 452) the court comment on the preceding case, and are of the opinion that the lessee under an oil lease has not the right to conduct gas away and appropriate it to his own use, considering that it is an arbitrary conclusion that a tenant who has only the right to take oil and salt may take the gas also.

The American cases have generally arisen in reference to grants or reservations in deeds, and in actions upon leases, and the question has generally been as to the right of the lessee to minerals not enumerated in the lease.

In a West Virginia case, *Petroleum Co.* v. *Transportation Co.* (28 W. Va., 210), it was held that natural gas is incapable of being absolute property, and is the subject of qualified property only, belonging to him who first appropriates it. It appears that generally the lessee is confined to the extraction of the minerals named alone, and is liable to accounting for the value of others extracted, and to be enjoined from further removal of them. The West Virginia case cited announces a contrary rule, however, as to natural gas, and the reasoning of that case might extend to petroleum, though not to ordinary minerals. It brings up the notion, referred to by the court in *Westmoreland Gas. Co.* v. *De Witt* (135 Pa., 235, 249), that water, oil, and gas may be classed in a sense as minerals *feræ naturæ* until they are reduced to possession, when it seems that a proper case has arisen for the application of the principle that the tenant's possession is the possession of his landlord. (Barringer and Adams's Law of Mines and Mining in the United States, p. 131, *note*.)

The general principles determined in reference to questions as to grants follow the familiar rules of construction. In these cases as well terms are to be understood in their plain, ordinary, and popular sense, unless they have acquired a particular technical sense by the known usage of trade. They are to be construed to include only minerals in common use and commonly known by such terms at the time of the execution of the grant. Minerals which, by subsequent discoveries of science, are brought within the definition of the terms are not included unless the grant shows an intention to contract upon the basis of possible discoveries. We conceive that less clear and strong proof would properly satisfy a court of the extent or exceptional use of a term in a conveyance upon the understanding of the parties than would be held necessary as to an act of Congress by Federal courts in a customs case. The authority just cited contains on page lxxv of the geological preface the following paragraph as to natural gas:

> As intimated in the preceding description of oil deposits, natural gas is only another product of the same substance which has produced both asphalt and petroleum, whatever that substance or source may have been. It simply represents the most volatile portions of such substances, the heavier having been converted, as is supposed, into bitumen, which volatile portions have been driven off by the agencies above referred to. It is always found on top of the oil when immediately associated with it, but sometimes it is found isolated and far beneath the oil-producing strata in the vicinity. This is simply due to the fact that it was checked at this point in its

> upward course and collected there. Give it a chance, and it will always rise above the oil, being more volatile. While not a mineral in a mineralogical sense, it is so considered in law. For, in a general legal sense, any valuable inert or lifeless substance formed or deposited in its present position through natural agencies alone, and which is found either in or upon the soil of the earth or in the rocks beneath the soil, is a mineral. With a number of exceptions, such as coal, graphite, limestone, infusorial earth, asphalt, petroleum, and natural gas, phosphate rock, guano, nitrate of soda, amber (fossil resin), etc., these substances are of inorganic origin. The above definition is, of course, not a definition of the term as used in geology or mineralogy, but only as used in law and in commerce.

A curious result is reached in this authority, one of the authors of which is a trained geologist, that natural gas is not a mineral in a mineralogical sense, but is to be considered so in law and commerce although no authority for this proposition is furnished, and although most minerals are by this authority, in accordance with the usual view, of inorganic origin, the exceptions given include petroleum and natural gas. Natural gas is volatile and vagatory, and consequently is not inert. This authority, scientific rather than legal, shows that there is divergence in the geological and mineralogical use of the term "mineral," and merely asserts the legal meaning to include gases, which is plainly contrary to the rule in law of *uti loquitur vulgus*.

In *Dunham* v. *Kirkpatrick* (101 Pa. St., 36), which turned on considerations special to the instrument con-

strued, the court conceded the wide scientific definition of the mineral, and said (p. 44):

> Certainly in popular estimation petroleum is not regarded as a mineral substance any more than is animal or vegetable oil, and it can, indeed, only be so classified in the most general or scientific sense. How, then, did the parties to the contract under consideration think and write? As scientists; or as business men using the language and governed by the ideas of everyday life? * * * If we adopt the popular understanding, we can not regard petroleum as a mineral. * * * If they * * * expected to reserve oil under the general term "mineral," they were mistaken, and should have known that they were using that word in a manner not sanctioned by the common understanding of mankind; hence in a manner that could not be approved by the courts of justice.

In *Gibson* v. *Tyson* (5 Watts, 34, 41), the old idea that a mineral must be of a metallic nature in the opinion of the bulk of mankind is referred to. In the Opinions of the Attorneys-General (14 Op., 115), the point is incidentally considered, and the following quotation from Bainbridge on Mines and Minerals (p. 1) is cited:

> A mineral has been defined to be a fossil, or what is dug out of the earth. The term may, however, in the most enlarged sense, be described as comprising all the substances which now form or which once formed part of the solid body of the earth, both external and internal, and which are now destitute of and incapable of supporting animal or vegetable life. * * * .

The opinion of Mitchell, J., in *Westmoreland Gas Co.* v. *De Witt* (*supra*), says that "gas, it is true, is a mineral,

but it is a mineral with peculiar attributes. * * * Possession of the land, therefore, is not necessarily possession of the gas. If an adjoining or even a distant owner drills his own land and taps your gas so that it comes into his well and under his control, it is no longer yours, but his." The conclusion from this is that, although natural gas may belong to the mineral kingdom, it is of so peculiar a nature that an application of the common-law ruling concerning property and minerals would be dangerous.

In *Gill* v. *Weston* (110 Pa. St., 312), petroleum was held to be "a mineral substance obtained from the earth by a process of mining."

In *Hartwell* v. *Camman* (10 N. J. Eq., 128), the court, construing a conveyance granting "all mines, minerals, opened or to be opened," say:

> By the use of the terms "mines" and "minerals" it is clear that the grantor did not intend to include everything embraced in the mineral kingdom, as distinguished from what belongs to the animal and vegetable kingdom. If he did, he parted with the soil itself. * * * Nor can I see any more propriety in confining the meaning of the terms used to any one of the subordinate divisions into which the mineral kingdom has been subdivided by chemists, either earthy, metallic, saline, or bituminous. * * * I do not think the term should be confined to the metals or metallic ores.

So that it appears from the American authorities, dealing with situations which required frequent application of the evolution of scientific knowledge and theories to liquid and gaseous forms in mineral products, under the

common occurrence of the term "minerals" in leases, that neither water nor oil, much less gas, has been established as included in the term. Furthermore, although in reference to deeds and leases the general rule is that the language be taken in its ordinary sense, the question has arisen under these cases from the point of view of property. The question under tariff laws is different and peculiar, and requires a more stringent application by the decisions of this court of the common meaning of the term, and its well-established import in commerce.

The view that the ruling of the general appraisers is conclusive as a finding of fact, and should not be disturbed, is clearly erroneous, as applied to this case. The evidence was conflicting and indefinite, even if it is competent to establish the alleged scientific usage. Furthermore, the main question as to the meaning of the term "mineral" is not wholly or purely a question of fact. Besides the bare inquiry as to the actual use of the term, which is obviously from the record uncertain and not definitely established, even among scientists, the question involves so many scientific considerations and so much that is abstruse and abstract that it becomes, we contend, a mixed question of fact and law, and as such it is plainly subject to review by the courts. The cases cited below by the importers, *In re Van Blankensteyn et al.* (56 Fed. Rep., 474), *In re Herrman* (id., 477), *In re Kursheedt Mfg. Co.* (49 Fed. Rep., 633), hold that when a finding of fact is wholly without evidence to support it, or when it is clearly contrary to the weight of evidence, it is the duty of the court to disregard it.

We contend here that the finding of the board regarded only the fact of the scientific usage of the word and substantially ignored the ordinary use, and that even as to the scientific usage the evidence was conflicting, and there was no such clear preponderance as alleged to justify their ruling, and that therefore it was plainly the duty of the court below to disregard their finding and reexamine and review the subject upon the facts as well as upon the law. Besides, section 15 of the customs administrative act expressly contemplates the question of fact as well as of law involved in the decision of the Board of General Appraisers as subject to review by the circuit court.

The learned judge's view is really based upon what he considers the impossibility of Congress intending to embrace natural gas under the "catch-all" clause. He really ignores the actual language of Congress which is that there should be levied, etc., on the importation of all "raw or unmanufactured articles, not enumerated or provided for in this act, a duty of 10 per cent ad valorem." The "catch-all" clause was expressly devised to cover all newly discovered or newly imported articles of commerce, and prevent them from finding a place in the free list. Ever since 1842 the free list has been confined to enumerated articles (5 Stat., 560; 9 Stat., 49; 11 Stat., 193), and since the tariff of 1861 (12 Stat., 196) the duty of 10 per cent on raw or unmanufactured articles not enumerated, and of 20 per cent on such articles manufactured in whole or in part, has been applied. This provision is applicable to articles thereafter discovered or thereafter first imported, as well as to articles

which were at the time the act was passed well known in trade and commerce.

We contend that the general presumption is in favor of the collector's decision (*Arthur* v. *Unkart*, 96 U. S., 118; *Erhardt* v. *Schroeder*, 155 U. S., 124; *United States* v. *Rosenwald*, 35 U. S. App., 89), that although it has been decided that the citizen is not to be taxed on vague and doubtful interpretations (*Powers* v. *Barney*, 5 Blatchf., 202; *Hartranft* v. *Wiegmann*, 121 U. S., 609, 616; *American Net and Twine Co.* v. *Worthington*, 141 U. S., 468, 474; *Erushaw* v. *Cadwalader*, 145 U. S., 247, 262), there is now, at least, no presumption in favor of a lower rate of duty in view of section 5 of the tariff act of 1890 and previous similar provisions. The object of a provision that applies the highest rate, if two or more rates shall be applicable, embraces a case where the doubt is whether the article is dutiable or on the free list. So, too, we contend that the presumption is in favor of the "catch-all" clause, not against it. In view of this clause, if natural gas was without the specific contemplation of the Congress of 1890, it is for that very reason dutiable. The presumption fairly is that all imported articles are dutiable unless plainly excepted.

The majority of the learned judges in the circuit court of appeals sustained the Government's contention that the larger scientific definition of mineral can not be applied to natural gas, but held that certain publications of the Treasury Department, classifying natural gas with petroleum as a mineral, are supposedly referred to by Congress for enlightenment, and must be taken as showing that Congress used the word not in its ordinary

sense, but broadly enough to include natural gas, and that when legislating as to rates of duty to be laid on the products of other countries, they employed the word "minerals" in an equally comprehensive sense.

While it has been urged in tariff cases that the courts may take notice of Treasury decisions, and that some presumption is to be attached to words used in a law drawn from their use in such decisions, this presumption has never been extended to the form and contents of statistical abstracts and reports. In the application for *certiorari* in this case a facsimile page from the statistical abstract for 1888, one of those relied on by the learned court is given, by which it appears that under the heading "products" and the subheading "nonmetallic" appears natural gas, along with bromine and petroleum and mineral waters, none of which are considered minerals in the vernacular, and about which scientific opinion is unsettled. And although the tabulation used the words "minerals produced," which appears to have been changed by some accident from the original form of "mineral products" (p. 9, application for *certiorari*), the summarizing lines at the foot of the columns speak of "metallic" and "nonmetallic mineral products."

Major Powell, an authority of high standing, and the Government witness best qualified to speak of these reports, because they were made under his supervision, does not think (Rec., p. 48) that he made a strict classification in treating natural gas as a nonmetallic mineral, and points out that the theory that natural gas is of mineral—that is, nonorganic—origin has been overthrown, and that it is derived from organic sources and

is not a true mineral. Not even all inorganic gases are minerals under recent scientific terminology, because a mineral should be at least homogeneous and of definite chemical composition. The Government abstracts and tables do not assume to classify on the basis of origin, but include indifferently a gaseous element like bromine, organic natural products like coal, petroleum, and natural gas, the liquid "mineral" water, the elementary metals, and both homogeneous and heterogeneous combinations of elements and minerals (some of them inorganic), such as borax, quartzes, feldspars and asphalts, and, finally, products of manufacture, like mineral paints.

The analogies between these various substances, founded on the kingdom to which in common they belong, or with which they are associated, are sufficiently close to justify their inclusion in such a classification of "minerals produced." They are, all alike, mineral products or mineral resources, but they do not determine that natural gas is even scientifically a mineral, much less do they establish the scientific use of the term in a tariff act. The only safe rule is the one frequently laid down by this court, that words having no established technical meaning in trade or manufacture are used in their "ordinary and commonly accepted sense." (*Saltonstall* v. *Wiebusch*, 156 U. S., 601, 602.)

The circuit court of appeals also refers to "the various official publications of the Federal Government set forth in the record;" but these use in a scientific sense not the word "mineral," but "mineral products" or "mineral resources"—much wider terms. The argument on the other side entirely loses sight of the difference

between mineral as a noun and as an adjective; between "minerals" and mineral resources or products, or substances allied to minerals.

Judge Wallace sustained the Government contention that however natural gas may be classified scientifically, neither the common acceptation nor the commercial signification of minerals includes it, but he thinks it should be classified as "crude bitumen." We contend that the argument which excludes crude minerals applies with equal force to bitumen. The testimony that bitumen is a generic term applied to a large number of substances which consist chiefly of hydrocarbons, and that it may exist in various degrees of consistency from gaseous to solid, comes mainly from the importers' chief expert witness (Rec., pp. 8, *et seq.*). Other witnesses thought natural gas a bituminous substance and admitted it to that denomination only in the same sense in which it might be classified as paraffine (pp. 20, 23).

The bitumen claim was really not pursued further by the importers, and was disapproved by the general appraisers. The learned judge's view is apparently based upon the Peckham report, which is embodied in the record, and upon statements in McCulloch's Commercial Dictionary, held to support the classification of natural gas as one of several gaseous forms of bituminous hydrocarbons. This view is substantially unsupported by scientific or legal authorities, and may have been abandoned by the importers for that reason. The statements in McCulloch's Commercial Dictionary do not include natural gas. They speak of inflammable mineral substances differing in consistency from a thin fluid to a solid.

(*c*) *As to the similitude claim, the meaning of "mining," and conclusion.*

We have considered the argument as including paraffine because related views of science underlie all the claims brought forward, but the claim as to paraffine is really irrelevant in the present proceeding. Besides the testimony in the record, the case of *Schoellkopf* v. *United States*, 38 U. S. App., 17, shows what the commercial article "paraffine" is. It is to be distinguished from the chemical "paraffin."

The fundamental error as to all the claims is that of supposing scientific definitions to be applicable. Even these are based on theories still unsettled. If there were well-established metamorphic forms of certain substances or compounds occurring with substantial homogeneity and appearing now as gas and again as a liquid or solid, as ice, water, and steam are known to be the same substance under different conditions, the claim here advanced might be made with some right to examination and acceptance, although such a claim as to carbonic acid gas made liquid by artificial pressure was rejected by the Board of General Appraisers in G. A., 4107. But no such claim can be made; not only the conditions but the constituents vary widely, and by no manner of argument, which would not equally justify the free use of the scientific imagination and the adoption of still less settled hypotheses as to relations between different forms of matter, can natural gas be embraced under the terms "bitumen" and "mineral" as known in ordinary life and trade.

We must deal with the article as it exists and is used and called in daily life and common acceptation, and not seek to determine its character on underlying affinities or by resolving mixed protean forms of matter into many equivalents on the character of part of their constituents. There is no reason which would admit free natural gas used for heating and lighting purposes which would not perhaps equally admit manufactured gas used for the same purposes. They are equally dutiable or equally free, although, if dutiable, at different rates. The manufacture of gas might be held to be the production and not the refinement of a crude mineral by a process of manufacture.

There appears to have been some argument below on behalf of the importers claiming free admission of the gas upon the similitude clause. The court, however, has not displayed any great readiness to apply the similitude clause to articles or substances in cases similar to this. (*Erhardt* v. *Steinhardt*, 153 U. S., 177; *Herrman* v. *Robertson*, 152 U. S., 521; *Mason* v. *Robertson*, 139 U. S., 624; *Hartranft* v. *Meyer*, 135 U. S., 237; *Arthur* v. *Butterfield*, 125 U. S., 70; *Arthur* v. *Sussfield*, 96 U. S., 128.)

Besides, there is no satisfactory basis for the claim in this case. Natural gas bears no similitude to paraffine, bitumen, or minerals, either in appearance or in uses to which it can be put. As to the similitude based upon composition, that, as has been shown, is a scientific question involving abstract chemical relations. The evidence shows that the constituents of natural gases vary,

and since the respective atoms of carbon and hydrogen in the various series of hydrocarbons differ, the affinity or relation between the various members of the series does not constitute the similitude contemplated by tariff acts.

Some claim was made to classification of natural gas as a mineral because the method of obtaining it was by "mining." This fails to account for the difference between mining and mining processes; a difference similar to the difference between minerals and mineral products. Mining no doubt includes the sinking of shafts, cutting drifts, tunnels, and slopes, or stripping quarries and beds to obtain minerals, and perhaps the sinking of a shaft for purposes of mine ventilation and to draw off such deleterious gases as natural gas would be in a mine. Prospectors drill holes for many purposes, including the search for oil and gas. But we speak of boring or drilling or sinking a well for water, and oil and gas wells are sunk—this is a mining process, perhaps; it is not mining, nor are oil and gas wells "mines" by common understanding.

Under *Jünge* v. *Hedden* (146 U. S., 233, 238), natural gas is an "article" within the meaning of the tariff laws. It would hardly be denied that both scientifically and in the language of trade in reference to importations it is a substance, although not "substantial" in common parlance. It is or may be also a "material" of manufacture. It is a natural product, and if its use, as it comes from the ground, by burning is not a manufacture, in modern gas industries and in other industries, it is

doubtless susceptible of use, by mingling in the retort, or by distillation, for making improved illuminants, and obtaining further products.

We respectfully submit that in any aspect the importation in this case is properly taxable as a raw or unmanufactured article not enumerated or provided for in the act of 1890, and is not entitled to free entry as crude bitumen or a crude mineral; and therefore that the judgment of the circuit court of appeals should be reversed.

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